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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,505	04/09/2001	Chung-Hsing Tzu	004728.P054	6728
23616	7590	09/17/2004	EXAMINER	
LAW OFFICES OF CLEMENT CHENG 17220 NEWHOPE STREET #127 FOUNTAIN VALLEY, CA 92708			VU, QUANG D	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 09/17/2004 .

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,505

Applicant(s)

TZU ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-33,35,37-46 and 48-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-33,35,37-46 and 48-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 29, 30, 32, 33, 35, 37-46 and 48-51 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,081,029 to Yamaguchi.

Regarding claim 29, Yamaguchi (figure 1) teaches a semiconductor package, comprising:

a leadframe (12, 13) having:

a homogeneous die pad (13) defining opposed upper and lower surfaces; and

a plurality of homogeneous leads (12) disposed at least partially about the die pad (13) in spaced relation thereto, each of the lead (12) defining opposed upper and lower surfaces;

a die (15) attached to the upper surface of the die pad (13) and bonding wires (16) connected between the portions of the leads (12) and die (15) for electrical communication; and

a molding compound (17) at least partially encapsulating the die (15) and the leads (12) such that portions of the leads (12) which define the lower surfaces thereof protrude from a lower surface of the molding compound (17); and

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wherein the leadframe (12, 13) is electrically isolates the leads (12) and the die pad (13) from each other, and exposes the lower surface of the molding compound (17).

It is inherent that the leads (12) include the bonding pads because leads are conventionally connected through bonding pads to the structures it interconnects between the wires and the external circuit.

The claimed limitation “the leadframe is subjected to a metal removal process” in claim 29 is taken to be product by process limitations, which does not carry weight in claim drawn to structure. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process steps, which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

Regarding claim 30, Yamaguchi teaches the die (15) is attached to the upper surface of the die pad (13) through the use of an adhesive material (column 10, lines 16-17).

Regarding claim 32, Yamaguchi teaches the die (15) is electrically connected to the portions of the leads (12) via bonding wires (16), which are encapsulated by the molding compound (17).

Regarding claim 33, Yamaguchi teaches the molding compound (17) comprises mold resin (column 10, line 22).

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Regarding claim 35, Yamaguchi teaches the lower surface of the molding compound (17) extends along a first plane; the lower surfaces of the leads (12) extend along a common second plane; and the first and second planes extend in spaced, generally parallel relation to each other.

Regarding claim 37, Yamaguchi teaches the lower surface of the die pad (13) extends along the second plane.

Regarding claim 38, Yamaguchi teaches the upper surface of the die pad (13) is generally planar; and the upper surfaces of the leads (12) are generally planar and extend in generally coplanar relation to the upper surface of the die pad (13).

Regarding claim 39, Yamaguchi applies to this claim as discussed regarding claim 29 above.

Regarding claim 40, Yamaguchi teaches the leadframe (12) comprises a homogeneous die pad (13) defining opposed upper and lower surfaces, the die (15) being attached to the upper surface of the die pad (13).

Regarding claim 41, Yamaguchi teaches the die (15) is attached to the upper surface of the die pad (13) through the use of an adhesive material (column 10, lines 16-17).

Regarding claim 42, Yamaguchi teaches the lower surface of the molding compound (17) extends along a first plane; the lower surfaces of the leads (12) extend along a common second plane; the lower surface of the die pad (13) extends along the second plane; and the first and second planes extend in spaced, generally parallel relation to each other.

Regarding claim 43, Yamaguchi teaches the die (15) is electrically connected to the portions of the leads (12) via bonding wires (16), which are encapsulated by the molding compound (17).

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Regarding claim 44, Yamaguchi (figure 1) teaches a semiconductor package, comprising:
a leadframe (12, 13) having:
a homogeneous die pad (13) defining opposed upper and lower surfaces; and
at least one homogeneous lead (12) disposed in spaced relation to the die pad (13) and defining opposed upper and lower surfaces;

a die (15) attached to the upper surface of the die pad (13) and bonding wires (16) connected between the portion of the lead (12) and die (15) for electrical communication.

a molding compound (17) at least partially encapsulating the die (15) and the lead (12) such that portions of the at least one leads (left [12], right [12]) and the portion of the die pad (13) which define the lower surfaces thereof protrude from a lower surface of the molding compound (17); and

wherein the leadframe (12, 13) is electrically isolates the leads (12) and the die pad (13) from each other, and exposes the lower surface of the molding compound (17).

It is inherent that the leads (12) include the bonding pads because leads are conventionally connected through bonding pads to the structures it interconnects between the wires and the external circuit.

The claimed limitation “the leadframe is subjected to a metal removal process” in claim 44 is taken to be product by process limitations, which does not carry weight in claim drawn to structure. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the

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patentability of the final structure of the product “gleaned” from the process steps, which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

Regarding claim 45, Yamaguchi teaches the die (15) is electrically connected to the lead (12) via bonding wires (16), which are encapsulated by the molding compound (17).

Regarding claim 46, Yamaguchi teaches the lower surface of the molding compound (17) extends along a first plane; the lower surface of the lead (12) extends along a second plane; and the first and second planes extend in spaced, generally parallel relation to each other.

Regarding claim 48, Yamaguchi teaches the lower surface of the die pad (13) extends along the second plane.

Regarding claims 49, 50 and 51, the claimed limitations “the metal removal process is accomplished by chemically etching the leadframe” in claims 49-51 are taken to be product by process limitations, which does not carry weight in claim drawn to structure. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product “gleaned” from the process steps, which must be determined in a “product by process” claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,081,029 to Yamaguchi in view of US Patent No. 6,420,779 to Sharma et al.

Regarding claim 31, Yamaguchi differs from the claimed invention by not showing the adhesive material includes epoxy. However, Sharma et al. teach the adhesive material (160) includes epoxy (column 3, lines 48-49). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Sharma et al. into the device taught by Yamaguchi because it provides an adhesion between the chip and the chip pad.

Response to Arguments

Applicant's arguments filed 05/14/04 have been fully considered but they are not persuasive.

It is argued, in page 7 of the remarks, that Yamaguchi does not teach or suggest the leadframe is electrically isolates the bonding pads and the die pad from each other, and exposes the lower surface of the molding compound. This argument is not convincing because

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Yamaguchi (figure 1) teaches the leadframe (12, 13) is electrically isolates the leads (12) and the die pad (13) from each other, and exposes the lower surface of the molding compound (17).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 571-272-1667. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qv
September 14, 2004


DONGHEE KANG
PRIMARY EXAMINER